

## **GRESHAM'S LAW, FACT OR FALSEHOOD?**

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*Noel Sullivan surveys the historical controversy surrounding the validity of Gresham's law, and examines whether or not its popular definition: "bad money drives good money out" is in keeping with what Thomas Gresham wrote. He concludes that the simple expression of the law can be misleading, and can hinder its applicability in practice.*

### **Introduction**

Gresham's Law has been popularly defined as "*bad money drives out good money*" (Chown 1994: 16). Questions have arisen regarding the truth of this "law," and its applicability to the real world.

During the course of this essay, I aim to shed some light on whether this law holds as is, or if it needs some modifications. In order to analyse an economic theory, or indeed any theory for that matter, it is important to return to its origins. I will start my analysis with Sir Thomas Gresham, the alleged author of the said law, and a discussion of the economic climate of his day. It is important that a brief description of the development of the theory in economic literature be included, followed by restatements of the same. Illustrations and historic examples will be provided throughout. In conclusion, I will remark on the importance of correct interpretation of economic history and thought, and summarise my analysis of the validity of Gresham's law.

### **Sir Thomas Gresham**

Thomas Gresham was born in 1519 to a banker named Richard Gresham. After his education at Gonville hall in Cambridge, Thomas was apprenticed to his uncle, Sir John Gresham, a merchant. Gresham was no stranger to politics or to the workings of high society; his father served as the Lord Mayor of London in 1537. When his father died, he inherited the bank, where he became quite an expert in financial affairs. In the early 1550's, he was hired by the Crown to work

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as a royal agent in Antwerp, one of the major financial centres of the day (Mundell 1998).

At the time, England had a bimetallic monetary system; both gold and silver circulated as currency. Between 1542 and 1551, English monarchs pursued policies which have become known as the 'Great Debasement.' This was initiated by Henry VIII, and lasted until the reign of Elizabeth I, commencing in 1558<sup>1</sup>. Debasement describes methods used to procure a premium from the issue of coins by decreasing the precious metal content of them (Chown 1994). Chown identifies four methods to achieve this aim. Firstly, debasement can be implemented honestly through an increase in seigniorage. This is not very effective as it is very visible; the public will not be duped by this and they will not change bullion into coinage.<sup>2</sup> Other deceptive ways to debase the currency include reducing the weight of issued coins, keeping the weight the same but decreasing the proportion of precious metal in the alloy in relation to the non-precious metal, and crying up the value of the coin.

The Great Debasement was described as "*a fiscal exploitation of the coinage*" which was "*arbitrary, particular and fraudulent*" (Challis 1978, cited in Chown 1994: 43). During Henry VIII's period of manipulation of the currency, the weight of the silver penny was reduced by one third, while its silver content was brought down from nearly 100 percent to 25 percent. In 1551, Edward VI enhanced gold sovereigns, and further reduced the weight of silver pennies. In 1558, Elizabeth I came to power. Gresham was introduced to the Queen and was given the task of negotiating a loan in Antwerp on behalf of the crown. He sent a letter to Elizabeth in which he informed her that the debasing of the currency by her father (Henry VIII) was the cause of the lack of gold in circulation in England.

"Ytt may please your majesty to understande, thatt the firste occasion of the fall of exchainge did growe by the Kinges majesty, your latte ffather, in abasinge his quoyne ffröme xxvis. viiid. To xiiis, ivd. Which was the occasion thatt all your ffine goold was convayd ought of this your realme" (Fetter 1932: 482).

Gresham advised her, among other things, to recoin the base money. It is from this advice given to the monarch that Gresham's law arose. This shall be discussed further in later sections. Fetter remarks:

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<sup>1</sup> Between 1542 and 1558, three monarchs sat on the throne of England: Henry VIII, Mary, and Edward VI (not counting Lady Jane Grey's brief reign.)

<sup>2</sup> Seigniorage: at the mint the public would bring bullion to be made into coinage. The mint covered its cost and made a profit by either returning a lesser weight in coinage, or an identical weight with lower bullion content.

“It requires considerable ingenuity to draw from Gresham’s modest statement about debasement and the exchanges, with its historical inaccuracies,<sup>3</sup> a universal law the “bad money drives out good money” (1932: 483).

This comment will be important regarding my concluding words on the correct interpretation and chronological documentation of this economic law. This raises the question; did Gresham’s law really originate with Gresham? Many think that the earliest expression of Gresham’s law is in *The Frogs*, a play by the ancient Greek playwright Aristophanes (circa 405 BC.) Aristophanes compares the usage of cheaper copper coins and the resulting withdrawal of gold and silver coinage in Athens to the decreasing standard of its politicians (Burns 1927, cited in Chown 1994: 109).

In order to better explain the working of Gresham’s law, I will use an example found in Mundell’s *Uses and Abuses of Gresham’s Law in the History of Money*.

### **An Illustration: Gresham’s Law in the Bimetallic System**

Given that Gresham’s law was allegedly inspired by a crisis in a bimetallic currency system, it is appropriate to illustrate it using such an example. In order to construct a simple model, the following assumptions may apply. The world price ratio for silver to gold is 15.12 : 1, that is to say, 15.12 grains of silver will buy 1 grain of gold (and vice versa). The currency system of the country we are analysing is a bimetallic system where both gold and silver can circulate. The currency of the country is struck at the mint; ‘free coinage’ applies, i.e. the public may bring gold or silver bullion to the mint to be struck into coins. This particular country has no significant influence over the world price of gold or silver, hence no influence over the world price ratio. The country fixes the mint silver to gold ratio at 15 : 1. Because of this policy, the world price for gold is higher than what the public receive for it when they bring it to be coined at the mint, and the world price for silver is lower than what they would receive. This causes gold to leave circulation; it will be hoarded or exported by citizens of the country to be sold abroad. Silver will flood the system, as foreign speculators and citizens alike take advantage of its overvaluation. In this simple example, silver is overvalued, and gold is undervalued, hence silver is “*bad money*” and gold is “*good money*.” Mundell continues this illustration:

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<sup>3</sup> Fetter notes that Gresham recorded the debasing of the coins incorrectly.

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“Equilibrium can exist only when the market price of gold at home has risen to the international level of 15.12 : 1, which is possible only when all the gold has left the country, and the circulation is entirely silver. By overvaluing silver, the country, while nominally bimetallic, has put itself onto a de facto silver standard” (1998).

This illustration has historical support, as Mundell details. A bimetallic currency system was set up by Alexander Hamilton in the US in 1792. At the time of the foundation of the currency, the world was experiencing a time of financial uncertainty. The main financial power in the world at the time was France, and in 1789, the French peasants revolted against the aristocracy and the church, overthrowing the Ancien Regime. Prior to the French Revolution, the French silver to gold ratio had been set at 15.12 : 1; hence the world price ratio was the same. Hamilton had to anticipate the future of the price ratio. Under his system, a dollar was defined as 371.25 grains of silver, or 24.75 grains of gold, thus making the silver to gold ratio 15 : 1, as in the above illustration. Hamilton's predictions proved incorrect, as in 1803 France's price ratio under Emperor Napoleon Bonaparte was set at 15.12 : 1, as it had been prior to the Revolution. Because of this, silver was overvalued – hence “*bad money*” and gold was undervalued (“*good money*”). Mundell points out that this error in judgement caused the United States to be “de facto on a silver standard for the first four decades of its history” (1998).<sup>4</sup>

Legal tender laws can also reinforce Gresham's law. If, for example, the government of a country that is operating under a bimetallic system declares the overvalued currency as legal tender, the public will hoard, export, or melt the undervalued currency type into bullion (Rothbard 1980).

Gresham's law is not only applicable to bimetallic currency systems. In a monometallic system, the government may decree that money is to be valued by tale instead of by weight. This means that coinage of lesser weight or quality is worth the same as coinage of superior quality (coins could lose weight through acts of defacement such as clipping or sweating,<sup>5</sup> as well as through the wear of normal usage). This will result in the overvaluation of older coins, and the disappearance of newer coins, through hoarding or conversion to bullion (Rothbard 1980).

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<sup>4</sup> In 1834 and 1837, reforms brought the ratio to 16 : 1, reversing the overvaluation (Mundell 1998).

<sup>5</sup> ‘Clipping’ was the practise of cutting off small slices from the edge of the coin to hoard for sale or conversion to coin at the mint. ‘Sweating’ involved shaking new coins together in a bag and collecting the metal dust that resulted from the friction, using the dust for the same purposes as clippings.

## Gresham's Law in Literature

Gresham's law was first stated in MacLeod's 1858 *The Elements of Political Economy*.

“the illustrious Gresham, who has the merit of being, as far as we can discover, the first who discerned the great fundamental law of the currency, that good and bad money cannot circulate together...Now, as he was the first to perceive that a bad and debased currency is the cause of the disappearance of the good money, we are only doing what is just in calling this great fundamental law of the currency by his name. We may call it Gresham's law of the currency” (1858: 477).

In this, the earliest rendering of Gresham's law, we see Macleod's assertion that good money and bad money cannot be in circulation together. This is described as a “*glaring error*” by Mundell, whose restatement will be discussed in a later section (1998).

Over the next few decades, Gresham's law cropped up in different economists' work. According to Fetter, one of the most important of these works was *Money and the Medium of Exchange* by William Stanley Jevons. Jevons stated: “This law, briefly expressed, is that bad money drives out good money, but that good money cannot drive out bad money” (1875, cited in Fetter 1932: 490). Fetter criticised Jevons' statement of Gresham's law, postulating that: “there is a very real possibility at times of ‘good money driving out bad money’ in trade” (Fetter 1932: 492). This claim of Fetter's is expanded further in his paper, *Gresham's Law and the Chilean Peso*, which was published in 1933. This paper is basically an analysis of the troubled Chilean currency between 1851 and 1932. I have summarised a few of the more significant developments below, in order to provide a background for his argument.

In 1851, a bimetallic currency system was established in Chile, with the silver to gold ratio set at 16.39: 1 (in comparison to a European market ratio of 15.4 : 1). Gold was overvalued, effectively putting Chile under a gold standard. This caused a serious shortage of smaller denominations of currency (struck in silver), which was combated by the issue of government guaranteed silver coins. In 1875, the world market ratio swung to 16.5: 1, reversing the overvaluation of gold and effectively implementing a silver standard in Chile. Between 1878 and 1895, the government issued an inconvertible paper currency, due to war and instability (Fetter 1933).

In 1895 a gold standard was officially implemented, but was abandoned in 1898, when the government re-issued paper currency. As a result of this, gold

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was driven from general circulation, as well as silver, which was worth more in bullion form. Several new lower silver content Peso issues failed to fully deal with the renewed problem of the disappearance of small denomination coins, and in 1926, the gold standard was reintroduced (Fetter 1933).

Fetter points out that one would expect gold to be completely driven out of circulation altogether during the years between the gold standards (1898-1926), but this proved not to be the case. "Although driven from general circulation, gold continued to be used in the payment of customs duties<sup>6</sup> and to a limited extent in private business" (Fetter 1933: 825). Between 1898 and 1926, there were large movements in the value of the paper notes in relation to gold. Because of this instability, many of the country's business transactions were agreed in gold. Fetter described how good money, in some measure, drove out bad money, in direct contradiction to Jevons' assertions: "Instead of the paper peso expelling the gold peso from all monetary use in Chile, gold at times actually encroached upon the field of circulation of the paper money" (1933: 826). Fetter concluded that the driving out of currency could all be explained in terms of premiums. He argued that if you could not get a premium in the local economy for using good money, it would be driven out by bad money. If a local premium existed,

"there is no profit motive to take it out of circulation; the decision as to whether the higher valued or lower valued money will be used is dictated by convenience, custom or the feeling of the public as to the relative stability of the competing moneys" (Fetter 1933: 827).

Here he introduces important concepts into his expression of Gresham's law: the public's preferences, and in particular, confidence.

The theme of premium is echoed in Alexander Harris' contribution to *The New Palgrave's Dictionary of Political Economy* and reprinted in *The New Palgrave: A Dictionary of Economics*. Harris stated that Gresham's law, i.e. bad money driving out good money, would hold if "by legal enactment a government assigns the same nominal value to two or more forms of circulating medium whose intrinsic values differ" unless the demand for money outstripped the combined supply (cited in Eatwell et al. 1987: 565). In this case, "the more valuable medium will simply run to a premium" (ibid). Harris' interpretation of Gresham's law is strongly criticised by Mundell who labelled it: "merely a variant of MacLeod's mistake that "good money and bad money cannot circulate together" (1998).

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<sup>6</sup> Customs duties had to be paid for in gold or pounds Sterling by law.

## Further Restatements and Revisions

In 1986, Rolnick and Weber wrote a controversial paper titled *Gresham's Law or Gresham's Fallacy?* They countered what they termed as the two traditional interpretations of Gresham's law. These traditional views, included in the brief definition introducing this essay, are a qualified version of these interpretations, with a requirement that a fixed rate of exchange exist between two currencies in circulation (Rolnick & Weber 1986). Rolnick and Weber argued that the simple definition of Gresham's law could easily be refuted through historical examples, and that the qualified example could be easily dismissed by the lack of evidence of there ever having been a system where "the ratio of the face (or par) values of the monies (the par price) is somehow the fixed rate at which these monies exchange" (986: 186). They concluded that Gresham's law was properly expressed thus: "Bad money will drive good money out of circulation... but only when use of the good money at its market (non par) price is too expensive" (ibid). This expense was explained by the transaction costs of using undervalued money at a premium. They suggested that this would be prevalent in small denominations of currency. "Generally, the smaller the denomination, the more costly it is to pay a fractional part of the premium" (ibid: 196). This increased fractional cost would lead to the "*bundling*" of smaller denominations of undervalued currency to be exchanged in bulk, thus their disappearance from circulation, while larger denominations of the same currency remained in circulation at a premium.

In 1995, Greenfield and Rockoff wrote a reply to Rolnick and Weber's 1986 paper, analysing instances of Gresham's law in 19<sup>th</sup> century America. They argued that the main cost of using the undervalued currency was not the increasing fractional costs, but the cost of agreeing the premium; "The value of the non-par coin would fluctuate constantly, forcing people to monitor its value and then negotiate in every transaction" (1995: 1087). This would lead to the majority of transactions being made in par money. Greenfield and Rockoff recognised a point emphasised by Fetter and others; it is not because bad money is "bad" that it drives out good money, but because it is cheaper.

This belief was also expressed by Mundell in 1998. He restated Gresham's law as "Cheap money drives out dear, if they exchange for the same price" (1998). Mundell argued in his conclusion that Gresham's law is based on economy – dear money is driven out by its cheaper substitute, e.g. gold by silver, silver by paper, and paper by electronic transfer. From this perspective, Gresham's law is simply a progression of rational economic thought and of modernisation. Adam Smith wrote the following concerning the development of paper money in Book 2, Chapter 2 of *The Wealth of Nations*:

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“The substitution of paper in the room of gold and silver money replaces a very expensive instrument of commerce with one much less costly, and sometimes equally convenient. Circulation comes to be carried by a new wheel, which it costs less both to erect and to maintain than the old one” (1776, cited in Mundell 1998).

### Conclusions

Gresham's law, in its basic form, i.e. that bad money will drive out good money, seems to be a useful tool for simple economic modelling. However it would appear through the discussion of the historical development of thought concerning the law, that there needs to be some kind of adjustment in order for it to be more applicable to the real world. An important point, recognised by Fetter, among others, is that bad money is not “bad” per se, rather it is cheap (1932). Mundell's extension of this argument is interesting; the idea that the replacement of dear money by cheap money is not only economically rational, it is progress (1998). Fetter's inclusion of preferences and perceptions of the public in his statement of Gresham's law is an important development. He highlighted the importance of the confidence of the public in currency, which may override what may appear initially as rational decision-making. Thus we can see that Gresham's law is perhaps held back by oversimplification.

It is also clear that Gresham himself did not envisage a “*fundamental law of the currency*” as was alleged by MacLeod (MacLeod 1858: 477). It is important to be careful when viewing past economic writings and thought, not to over-assume, i.e. to avoid the synthesis of theories that never coherently existed.

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